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Investigation of Silkworm Response Characteristics to Treatment of IGR (Insect Growth Regulator) Pesticides II - Investigation of Effects by Concentration and Treatment Time of Ecdysis Inhibitor (Buprofezin), Ecdysis Accelerator (Tebufenozide) on Silkworm

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In 2002, many silkworm rearing farmhouses were damaged by occurrence of non-pupating silkworms in spring. It is estimated that one of the cause of non-pupating is IGR pesticides which were sprayed around during the spring rearing season. Thus, 8 IGR pesticides had been selected and the effects to silkworms were investigated. In this study, the effects of two pesticides (Buprofezin: Ecdysis inhibitor, Tebufenozid: Ecdysis accelerator) to silkworms were investigated as an extension of some items of previous experiment. The result of silkworm rearing and characteristics investigation by treatment period (from 4th instar larva to cocooning) nd concentration (10^{-3}, 10^{-7}, 10^{-14} of stanard spraying concentration) are as follows.

There were no differences between treated silkworms and untreated silkworms in 5th instar larva period by the treatment of pesticides, concentrations and treatment periods. Only the silkworm rearing results were more influenced by treatment of ecdysis accelerator (Tebufenozide) than treatment of ecdysis inhibitor (Buprofezin). Missing larva ratio was high as the treatment period was extended in the 10^{-3} dilution of standard spraying concentration. Silkworm mounting ratio was high as treatment periods were shorten. There were no differences in missing larva ratio between treatment of 10^{-7} and 10^{-14} of standard spraying concentration. And treatment of 10^{-7} and 10^{-14} of standard spraying showed no difference compared to control. So it can be assumed that the treatment of 10^{-7} and 10^{-14} of standard spraying is no harm to silkworms. Also, there were no sign of morphological difference in the characteristics of shape

and tissue, and in SEM photographing of silkgland and body when ecdysis inhibitor (Buprofezin) was treated. Only shrinking of silkworm body occurred in the ecdysis accelerator (Tebufenozide) treatment of 10^{-3} of standard spraying concentration, but decrease of skin thickness and burst of skin which occurred in 10^{-2} concentration did not happen. From the results of this study, there were no damages to silkworms in the treatment of pesticides in 10^{-7} and 10^{-14} of standard spraying concentration but the treatment of Tebufenozide pesticides in 10^{-3} of standard spraying concentration can be a damage to silkworms.